

SEQUENCE LISTING

<110> Johanson, Urban
West, Joanne
Dean, Caroline

<120> *Arabidopsis thaliana* derived *Frigida* gene conferring late flowering

<130> Mewburn

<140> US 09/890,475

<141> 2001-08-01

<150> PCT/GB00/00197
<151> 2000-01-25

<150> GB 9902660.1
<151> 1999-02-05

<160> 58

<170> PatentIn Ver. 2.1

<210> 1
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<213> Artificial Sequence

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<223> Description of Artificial Sequence: FRI amino acid
sequence predicted from the cDNA sequence

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20 25 30

Pro Lys Ile Val Glu Thr Glu Ser Thr Ser Met Asp Ile Thr Ile Gly
35 40 45

Gln Ser Lys Gln Pro Gln Phe Leu Lys Ser Ile Asp Glu Leu Ala Ala
50 55 60

Phe Ser Val Ala Val Glu Thr Phe Lys Arg Gln Phe Asp Asp Leu Gln
65 70 75 80

Lys His Ile Glu Ser Ile Glu Asn Ala Ile Asp Ser Lys Leu Glu Ser
85 90 95

Asn Gly Val Val Leu Ala Ala Arg Asn Asn Asn Phe His Gln Pro Met
100 105 110

Leu Ser Pro Pro Arg Asn Asn Val Ser Val Glu Thr Thr Val Thr Val
115 120 125

Ser Gln Pro Ser Gln Glu Ile Val Pro Glu Thr Ser Asn Lys Pro Glu
 130 135 140

Gly Gly Arg Met Cys Glu Leu Met Cys Ser Lys Gly Leu Arg Lys Tyr
 145 150 155 160

Ile Tyr Ala Asn Ile Ser Asp Gln Ala Lys Leu Met Glu Glu Ile Pro
 165 170 175

Ser Ala Leu Lys Leu Ala Lys Glu Pro Ala Lys Phe Val Leu Asp Cys
 180 185 190

Ile Gly Lys Phe Tyr Leu Gln Gly Arg Arg Ala Phe Thr Lys Glu Ser
 195 200 205

Pro Met Ser Ser Ala Arg Gln Val Ser Leu Leu Ile Leu Glu Ser Phe
 210 215 220

Leu Leu Met Pro Asp Arg Gly Lys Gly Lys Val Lys Ile Glu Ser Trp
 225 230 235 240

Ile Lys Asp Glu Ala Glu Thr Ala Ala Val Ala Trp Arg Lys Arg Leu
 245 250 255

Met Thr Glu Gly Leu Ala Ala Glu Lys Met Asp Ala Arg Gly
 260 265 270

Leu Leu Leu Val Ala Cys Phe Gly Val Pro Ser Asn Phe Arg Ser
 275 280 285

Thr Asp Leu Leu Asp Leu Ile Arg Met Ser Gly Ser Asn Glu Ile Ala
 290 295 300

Gly Ala Leu Lys Arg Ser Gln Phe Leu Val Pro Met Val Ser Gly Ile
 305 310 315 320

Val Glu Ser Ser Ile Lys Arg Gly Met His Ile Glu Ala Leu Glu Met
 325 330 335

Val Tyr Thr Phe Gly Met Glu Asp Lys Phe Ser Ala Ala Leu Val Leu
 340 345 350

Thr Ser Phe Leu Lys Met Ser Lys Glu Ser Phe Glu Arg Ala Lys Arg
 355 360 365

Lys Ala Gln Ser Pro Leu Ala Phe Lys Glu Ala Ala Thr Lys Gln Leu
 370 375 380

Ala Val Leu Ser Ser Val Met Gln Cys Met Glu Thr His Lys Leu Asp
 385 390 395 400

Pro Ala Lys Glu Leu Pro Gly Trp Gln Ile Lys Glu Gln Ile Val Ser
 405 410 415

Leu Glu Lys Asp Thr Leu Gln Leu Asp Lys Glu Met Glu Glu Lys Ala
 420 425 430

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acaatataaca gtcataaaa atttggtaat ttgaccgatt taaggagagt ggaaattagg 540
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gcgcacccca caacgcacggc gaatccactg ctgcagcgac atcaatctga acagcgacga 660
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sequence of the H51 FRI gene

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ggtttacaga cattcaccat ctgaagaaag atatttgggt ttatccaatc aaaggcttcc 2160
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<210> 28
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<220>
<223> Description of Artificial Sequence: Primer

<400> 49
cgcgaattct tgggagttaa ataaatgac
```

29

```
<210> 50
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 50
gctcctgtaa ttgacattta ag
```

22

```
<210> 51
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 51
cactatctaa atagacacctc
```

19

```
<210> 52
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 52
tgcggattcc aaccttg
```

17

```
<210> 53
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer
```

<400> 53
gattgtcaag ctcaagttgg 20

<210> 54
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 54
caagatcaaa gactgctaaa tc 22

<210> 55
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 55
gtgagtgat ctagtgtca 20

<210> 56
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 56
cagaaggctc cggcgaac 18

<210> 57
<211> 1722
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Landsberg
erecta VRN2 cDNA

<400> 57
caagcttctt caatttgct tgctctct tacacagcca atcgggttt tcgcagctt 60
caggcctcaa tccaagacat tctatataag catattgcag aagaggcggt tctaattgtt 120
gcatttagtt tatcgctatg acgttagggaa attctaattt aggggaggcc tcagagttg 180
cactaacttc ataatcggtt cttgacgttg ttgagtgtaa ttgaacaaga atgtgttaggc 240
agaattgtcg cgcgaaatcc tcacccggagg aagtgttcc aactgtatgag aatctttga 300
tatattgtaa acctgttcga ctatataaca tctttcacct tcgctctcta ggcaacccat 360
cgtttcttcc aagatgtttt aactacaaaa ttqqaqcaaa qcqcaaaaqa aagtcaaqat 420

ctactggat ggtagtttc aactataagg attgtataaa cacattacag aaaactgaag 480
 ttagggagga ttgttcttgc ccattttgct ctatgctatg tggtagttc aaggggctgc 540
 aatttcattt gaattcatct catgattttat ttgaatttga gttcaagctt ttcgaagaat 600
 accagacagt taatgtttct gtaaaactta attccttcat atttgaggaa gaaggaagt 660
 atgacgataa atttgagccc ttctctct gctgaaacc tcgtaagcgg agacaaagag 720
 gtggcagaaa taacaccagg agacttaaag tatgtttttt accgttggat tcaccaggat 780
 taactaatgg cacagaaaat ggaatcaccc tacttaatga tggaaaccgt ggtttaggat 840
 atccccgggc aacagagctt gctggacaat ttgagatgac cagcaacatt ccaccagcca 900
 tagcccactc ttctctggac gctggtcta aagttatatt gacaagcgaa gctgtggtcc 960
 ctgctactaa gacaagaaaag ttatctgctg agcgatcaga ggctagaagc cacctacttc 1020
 ttcagaaacg ccaattctat cattctcaca gagtccagcc aatggcgctt gagcaagtaa 1080
 tgtctgaccg ggatagcgag gatgaagtgc atgacgatgt tgcagattt gaagatcgcc 1140
 agatgcttga tgactttgtg gatgtgaata aagatgaaaaa gcaattcatg catctttgga 1200
 actcgtttgc aagaaaaacaa agggttatacg cagatggtca tatctcttgc gcatgtgaag 1260
 cattttcaag attttacgag aaagagttgc accgttactc atcactcttc tgggtttgga 1320
 gattgtttt gattaaacta tggaaaccatg gacttgcga ctcagccacc atcaacaact 1380
 gcaataccat cctcgagaat tgccgtataa gctcagacac caccaccacc aacaacaaca 1440
 acagtgtgga tcgtcccagt gactcaaaaca ccaacaacaa taacattgtg gatcatccca 1500
 atgacataaa caacaagaac aatgttgaca acaaggacaa taacagcaga gacaaagtaa 1560
 ttaaatagga aaatctccgg cttttatgtat accgattttt cggattgtaa cttattcttc 1620
 tttcttaaaa aattgttttag gagcaacaa atttttata tggtagtgc ttcaactgtat 1680
 tacattttta gttaaaaaaaaaaa aaaatggatt ctgcttataaa ct 1722

<210> 58
 <211> 1715
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Columbia VRN2
 cDNA

<400> 58
 caagcttctt caattttgct tgctctctt cttacacggc caatcggtt tttcgagct 60
 ttcaggccctc aataacaagac attctatata agcatattgc agaagaggcg gttctaattt 120
 ttgcattggat ttgaacaata tgacgttaggg aaattctaat tttagggggg cctcagagtt 180
 tgcactaact tcataatcgat ctctggacgt tggtagttt atttgaacaa gaatgtgttag 240
 gcagaattgt cgccgcgaaat cctcaccggg ggaagtgatt tcaactgtat agaatctttt 300
 gatatatattgt aaacctgttc gactatataa catctttcac cttcgctctc taggcaaccc 360
 atcgtttctg ccaagatgtt tgaactacaa aattggggca aagcgcaaaa gaaagtcaag 420
 atctactggg atggtagttt tcaactataa ggattgtat aatacattac aaagaactga 480
 agtttagggag gattgttctt gtcatttttgc tggtagct tcaaggggct 540
 gcaatttcat ttgaattcat ctcattttt atttgaattt gagttcaagc ttttggaaaga 600
 ataccagaca gttaatgttt ctgtaaaact taattccttc atatttgggg aagaaggaaag 660
 tggatgtat aaatttgagc cttctctctt ctgctcgaaa cctcgtaagc gtagacaaag 720
 aggtggcaga aataacacca ggagactaa agtagctttt ttaccgttgg attcaccagg 780
 ttttagctaat ggcacagaaa atggatttgc cctgctgaat gatggaaacc gttggtttagg 840
 atatcccgag gcaacagacg ttgctggaca atttggatg actagcaaca ttccaccagg 900
 catagccccac tcttctctgg acgctggtgc taaagttata ttaacaaccg aagctgttgg 960
 ccctgctact aagacaagaa agttatctgc tgagcgatca gaggtagaa gccacctact 1020
 tcttcagaaa cgccaaattct atcattctca cagagtccag ccaatggcgc ttgagcaagt 1080
 aatgtctgtat cggatagcg aggtgaagt cgatgacgat gttcagattt ttgaagatcg 1140
 ccagatgctt gatgactttt gggatgtgaa taaagatgaa aagcaattca tgcatttttgc 1200
 gaactcggtt gtaagaaaac aaagggttat agcagatggt catatctt gggcatgtga 1260
 agtattttca agattttacg agaaagagtt gcaactgttac tcattactt tctgggtttg 1320
 gagattgtttt ttgattaaac tatggaaacca tggactgtc gactcagccca ccatcaacaa 1380

ctgcaatacc atcctcgaga attgccgtaa tacctcagtc actaacaaca acaacaacag 1440
tgtggatcat cccagtgact caaacaccaa caacaataac attgtggatc atccgaatga 1500
cataaaaaac aagaacaatg ttgacaacaa ggacaataac agcagagaca agtaattaaa 1560
taggaaacac tccggtttag atgataccga tctatcgat tgtaacttat tcttctttct 1620
taaaaaaatt gtttaggagc aaacaaagat ttatattgtt agtgtattca actgattaca 1680
tttttagta aaaaaatgga ttcccttaa taact 1715